

WHAT IS CLAIMED IS:

1. An immunopotentiating composition comprising:

5 (a) an immunopotentiating protein; and

(b) a second compound having an epitope against which a cellular or humoral immune response is desired.

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2. The composition of claim 1, wherein the immunopotentiating protein comprises a protein derived from microorganisms.

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3. The composition of claim 2, wherein the protein derived from microorganisms comprises a bacterial protein.

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4. The composition of claim 3, wherein the bacterial protein comprises a staphylococcal enterotoxin.

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5. The composition of claim 1, wherein the immunopotentiating protein comprises a monoclonal antibody directed against a T cell activation molecule on the cell surface of a T cell.

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6. The composition of claim 5, wherein the T cell activation molecule comprises a variable or constant region epitope expressed on an antigen specific T cell receptor polymorphic TcR  $\alpha$ ,  $\beta$ ,  $\gamma$  or  $\delta$  chain.

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7. The composition of claim 5, wherein the monoclonal antibody is directed against non-polymorphic TcR-associated CD3 chains,  $\gamma$ ,  $\delta$ ,  $\epsilon$  or  $\zeta$ .

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8. The composition of claim 7, wherein the monoclonal antibody comprises OKT3, SP34, or 64.1.

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9. The composition of claim 5, wherein the monoclonal antibody is directed against T cell surface antigens distinct from, and not physically associated on the cell surface with, TcR.

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10. The composition of claim 9, wherein the monoclonal antibody is directed against Thy-1.

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11. The composition of claim 9, wherein the monoclonal antibody is directed against an activation epitope expressed on a member of the Ly-6 protein family.

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12. The composition of claim 9, wherein the monoclonal antibody(s) is directed against human CD2.

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13. The composition of claim 9, wherein the monoclonal antibody is directed against CD28.

14. The composition of claim 1, wherein the immunopotentiating protein is a bispecific agent, wherein

one arm is specific for a T cell activation epitope, and the other arm specific for a T cell subset specific epitope.

5        15. The composition of claim 14, wherein the bispecific agent comprises a union of two monoclonal antibodies one directed individually against CD3, the other against CD4.

10        16. The composition of claim 1, wherein the second protein comprises a peptide of from about 8 to about 100 amino acids in length.

15        17. The composition of claim 1, wherein the second protein comprises a peptide of from about 8 to about 50 amino acids in length.

20        18. The composition of claim 1 wherein the second protein comprises a peptide derived from a tumor-specific or tumor-associated epitope.

25        19. The composition of claim 1, wherein the second protein comprises a peptide derived from a viral-specific or viral-associated epitope.

30        20. The composition of claim 1, wherein the second protein comprises a peptide with an amino acid sequence homologous to that derived from a gene in a bacteria, fungus, protozoal or metazoal parasite.

21. The composition of claim 19, wherein the viral-specific or viral-associated epitope comprises an amino acid sequence found on the surface of an HIV virus or which is specific for HIV infected cells.

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22. The composition of claim 21, wherein the peptide composition of the viral-specific epitope comprises an epitope from the gp120 envelope protein of HIV-1.

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23. The composition of claim 22, wherein the gp120 envelope protein epitope comprises peptides 18, T1, or T2.

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24. The composition of claim 19, wherein the viral-specific epitope comprises amino acid sequences homologous with those expressed on the surface of human hepatitis virus.

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25. The composition of claim 19, wherein the viral-specific epitope comprises amino acid sequences homologous with those expressed on the cell surface of viruses causing influenza.

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26. The composition of claim 1, wherein the immunopotentiating protein and the second protein are conjugated by crosslinking them to each other.

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27. The composition of claim 1, wherein the second compound comprises a protein.

28. The composition of claim 27, wherein the protein includes an amino acid sequence against which an immune response is desired.

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29. The composition of claim 1, further defined as a heteroconjugate composition wherein the immunopotentiating protein is conjugated with the second compound to form a heteroconjugate agent.

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30. A method of preparing a heteroconjugate agent for eliciting or enhancing a cellular or humoral immune response to an epitope contained within an amino acid sequence, the method comprising the steps of:

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- (a) obtaining an immunopotentiating protein; and
- (b) conjugating to said immunopotentiating protein a second compound to form the heteroconjugate agent, the second compound having an epitope against which a cellular or humoral immune response is desired.

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31. A method of eliciting or enhancing a cellular or humoral immune response in a mammal, to an epitope contained within a selected compound, the method comprising preparing an immunopotentiating composition in accordance with claim 1; and administering to the mammal an amount of said agent effective to elicit or enhance such a cellular or humoral immune response.

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32. The method of claim 31, wherein the mammal is a mouse, hamster, rat, rabbit, farm animal or primate.

5 33. The method of claim 32, wherein the primate is a human.

10 34. A vaccine comprising a immunogenically effective amount of a heteroconjugate agent defined in accordance with claim 1, in combination with a pharmaceutically acceptable diluent.

10 35. A method of stimulating or enhancing the immune system of a mammal which comprises preparing an immunopotentiating composition which includes an immunopotentiating agent characterized as having an ability to stimulate an immune response; combining the agent in a pharmaceutically acceptable vehicle; administering the resulting compound to the mammal in amounts effective to stimulate an immune response.

15 36. The method of claim 35, wherein the mammal has tumor.

37. The method of claim 35, wherein the mammal is immuno-compromised.

20 38. The method of claim 35 in which the mammal has an infection.

39. The method of claim 36 wherein the immunopotentiating composition further comprises a second compound against which an immune response is desired.

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40. A method of preparing monoclonal antibodies against a selected compound, comprising the steps of:

10 (a) immunizing mammals with an immunopotentiating composition as defined by claim 1;

15 (b) fusing lymphoid cells of the immunized mammal with myeloma cells to form fusion products which include hybridomas;

20 (c) culturing the fusion products in a selective medium to select for said hybridomas;

25 (d) screening the hybridomas to identify a hybridoma which secretes a monoclonal antibody directed against the selected compound; and

30 (e) isolating and culturing the identified hybridoma to prepare the monoclonal antibody.

41. The method of claim 40 wherein the selected compound is a protein.

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42. The method of claim 40 wherein the immunopotentiating composition comprises a Staphylococcus enterotoxin.

43. The method of claim 40 wherein the immunopotentiating composition comprises an immunopotentiating agent conjugated to the selected compound.

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44. A method for recruiting hematopoietic bone marrow stem cells of an organism, said method comprising administering an immunopotentiating agent in an amount effective to stimulate the development of said stem cells.

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45. The method of claim 44 wherein the immunopotentiating agent is an anti-CD3 mAb.

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46. The method of claim 45 wherein the immunopotentiating agent is a Staphylococcus enterotoxin.

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47. A method for enhancing the engraftment of hematopoietic tissue transplants in an individual receiving such a transplant, said method comprising administering to said individual an amount of an immunopotentiating agent effective to stimulate stem cell recruitment.

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48. The method of claim 47 wherein the immunopotentiating agent comprises an anti-CD3 mAb.

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49. The method of claim 47 wherein the immunopotentiating agent is a Staphylococcus enterotoxin.

50. A method of preparing immunological products, comprising the steps of:

5 (a) immunizing mammals with an immunopotentiating composition which includes an immunopotentiating agent; and

10 (b) obtaining immunological products from said immunized mammal, said products including T cells, B cells or antibodies.

15 51. The method of claim 50, wherein said immunopotentiating composition further comprises a second compound against which an immune response is desired.

20 52. The method of claim 50, wherein said immunologic products comprise antibodies, and the method further comprises preparing a gamma globulin fraction from said antibodies.

25 53. The method of claim 50, wherein said mammal is a human.

54. A method of administering immunologic products to a mammal comprising preparing such products in accordance with claim 50 and administering said products to a mammal.